

BELLEVILLE WASHERS IN BOLTED ASSEMBLIES

Belleville washers Characteristic features:

- Belleville washers are used to maintain load or tension in bolted assemblies. Bolted joints between studs or bolts and nuts can be weakened with time by vibrations or thermal expansion effect. Belleville washers inserted in the middle of a bolted joint are totally compressed and Belleville washer exerts a constant force that remain linear on the bolt head to maintain a continuous tension between pieces preventing the bolt from loosening, despite tension losses caused by thermal expansion and contraction.
- High temperature: during large temperature changes the flange expansion rate is greater than that of the cooler bolt resulting in permanent bolt stretch, lower gasket pressure and flange leakage. Using Belleville washers to avoid this problem.
- Low temperature: as cryogenic flanges cool down, the differential contraction between flange and bolt results in a loss of gasket load and flange leakage. Using Belleville washers to prevent this by maintaining a higher flange seal pressure.
- Flange creep: high temperature bolt creep causes insufficient gasket load and flange leakage. Using Belleville washers to prevent leakage by providing the additional tension needed to maintain adequate flange seal pressure.
- Vibration: mechanical vibration and pressure pulses often cause bolt and gasket deformation resulting in lower gasket seal pressure and flange leakage. Using Belleville washers to avoid this problem by absorbing vibration shock.
- Application Industry: Petrochemical, Power, Metallurgy, Paper, Pharmaceuticals, Food Processing.
- Application Equipment: Reactor, stirrer and heat exchanger flange bolts; Pumps, Fans, Centrifuge Flanges and Anchor Bolts; Power bus and copper alloy bolts; Pipe flange and valve flange bolt.



